

THE SCIENCE OF FARMING

Answers by the Veterinarian

Dr. A. S. Alexander
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Scours in Calves

WHAT causes the form of scours which kills calves of but a few days old? It is infectious, for one calf gives it to others and the trouble stays in an affected barn for years. It cannot be due to the feed, for the calves suck their dams at birth and take the scours almost at once. No cure has been found here. The calf bleeds and its eyes sink into its head immediately after birth. How can this disease be prevented?—H. T., Kansas.

Reply.—The description gives a good idea of the complaint known as "calf cholera" and it is infectious, as suggested, being due to the microbe known as "bacillus coli communis." "Colibacillosis" is the technical name of the disease and suggests the cause. The "coli" germ is naturally present in the intestines of animals and only seems to do harm when it gains entrance to the blood circulation by way of an abraded intestinal lining membrane, or if introduced by way of the mouth may, in certain conditions, cause the infectious disease in question. The disease is purely one of an infected premises and the first step to prevent it must be in maintaining perfect cleanliness in the stables and calf pens. Abandon any old, dirty drink pen where the disease has been. Provide a new, clean, fresh heddled, whitewashed pen into which sun and air enter freely. At birth wash the belly of the calf with a 2 per cent solution of coal tar disinfectant and wet its navel with a 1-500 solution of corrosive sublimate. Before the calf is allowed to suck for the first time flush out the vagina of the dam with a gallon of lukewarm half of 1 per cent solution of permanganate of potash and repeat this once daily for a week or longer. Wash the tail, thighs and udder of the cow with a 1 per cent solution of lysol, carbolic acid or coal tar disinfectant and then rinse off with warm water before the calf is allowed to suck for the first time and repeat this washing twice daily until danger is past. Prevent the cow's udder from at any time coming in contact with filthy floors or yards. If this is attended to there will be little likelihood of infection. There always is the bare possibility, however, that the contamination will occur in the vagina while the calf is passing out of the body. Sometimes the vagina is invaded by or the habitat of the causative germs and they may possibly get into the calf's mouth at the time of birth. If that occurs scouring will occur despite the adoption of the precautionary measures suggested, but being slight, may respond to treatment. For this form of scouring inject into the rectum freely every four hours a quart of lukewarm slippery elm bark tea containing a dram of coal tar disinfectant. By the mouth give a physio composed of equal parts of sweet oil and castor oil shaken up in warm milk. Do not use boiled milk on any account. It tends to induce infection by way of the intestinal tract. Following the physio give two or three times a day one to two teaspoonfuls of a mixture of one part of salol and two parts of subnitrate of bismuth, and if the calf is weak also give one tablespoonful of best brandy in water two or three times a day. Use disinfectants freely about the stable and isolate each scouring calf.

Pure Bred Sire Makes Dairying Pay

EVERY dairymen should look forward toward having a more profitable herd of cows next year than this year; not necessarily more cows, but better cows. How many have herds that will average more butter than your father's herd did, or perhaps than did your grandfather's herd?

You can't depend altogether upon the raise in price of land for your profits, not only because many do not own land, but because in many localities land has reached a price that most of the money to be taken from this source has already been made. It takes a better farmer to make money on \$100 or \$150 an acre land than it does on \$40 an acre land.

The task of building up a profitable dairy herd must begin with the sire. Without a pure-bred sire, with the ability to get calves capable of producing milk and butter fat economically all other efforts to improve your dairy herd must fail. The skillful breeder of any class of live stock realizes the importance of having a properly selected sire to head his herd. The average dairymen, however, gives this important subject little thought and makes use of a scrub sire because of the idea that it is cheaper to do so, or because his father got along all right with a scrub sire and he himself has not given the matter much thought. The scrub sire and the unprofitable cow go hand in hand in retarding dairy progress; where is found one generally is found the other. It is not necessary that every farmer have pure-bred cows of a dairy breed in order to have a profitable dairy herd, for high grade are just as efficient producers.

The following shows very distinctly the rapidity with which the qualities of the sire accumulate in the high grade:

Generation	Blood	Percent Imp'd	Percent unimp'd
1.....	1-2	50	50
2.....	3-4	75	25
3.....	5-8	87.5	12.5
4.....	9-16	93.75	6.25
5.....	17-32	96.87	3.12
6.....	33-64	98.43	1.56

This shows very well the truth of the often heard statement, "The sire is one-half the herd." It does not mean, however, that the same sire must be used throughout the six generations. This illustration is true whether or not a change in the sire is made. With the properly selected pure-bred sire used on the common cows found in the average herd the improvement will be much more rapid and the sire will be a great deal more than one-half the herd. His being pure bred gives him greater power to stamp his characteristics upon the offspring than can the grade cow.

Valuable information as to the importance of the sire in improving or injuring the productive capacity of the herd can be had from a study of the dairy herd records of the State Agricultural college of Missouri.

By comparing ten daughters of a sire with their dams it was determined to what an extent these daughters were influenced by their sire—that is, whether or not they were superior producers to their dams. It was found that ten daughters of one sire average 216 pounds of butter fat yearly, while their dams average 234 pounds yearly. It can readily be seen that this bull decreased the average production of the daughters 18 pounds under that of their dams. With another sire that was used there was no decrease or increase, the herd being at a standstill. Another sire which was used increased the average production of ten daughters 110 pounds of butter fat per cow over that of their dams. This 110 pounds of butter fat at an average price of 25 cents per pound would make \$27.50 that each daughter earned in excess of the earnings of her dam. Counting on the same basis thirty cows milked six years, we have \$4,950 worth of butter fat produced by the daughters in excess of that produced by the dams. You can readily see what the great value of this bull would have been had he been owned by a small association of neighboring patrons. He would have been cheap at \$1,000, while the other two bulls mentioned would have been expensive at \$10, because they left the herd in a worse condition than they found it. There is no question but what



A Fine Type of Holstein-Friesian Bull

The cheapest way for a poor man to obtain the use of a pure-bred sire is to induce a dozen of his neighbors to co-operate with him in the purchase of such a sire of merit as may be desirable. The Minnesota experiment station believes this is a feasible plan for poor or well-to-do farmers. The poor man can hardly afford to own such a sire for his exclusive use. The more fortunate neighbor does not want to waste money in exclusive ownership, so the practical way is to own a bull in neighborhood partnership and all use him until his usefulness is exhausted by reason of relationship to the cows of the community. Then he may be disposed of to some other equally wise neighborhood, when the first purchaser should procure another.

As we have been greatly in need of some improvement in our milk and butter stock in this part of the country, I began more than a year ago to talk up the idea of co-operating and buying a pure-bred Holstein-Friesian bull, and after quite a talk had among my friends we made up the money to buy the bull. If we had waited for some one person to buy such a bull we would very likely not have had any improvement for some time.

W. C. WHITFIELD, Cobden, Ill.

many farmers are lowering the productive capacity of their herds every generation on account of their paying no attention to the selection of sires.

Investigations carried on in some Indiana herds by the Indiana experiment station showed that herds in which pure bred sires were used were producing butter fat on an average of 3½ cents cheaper than herds which were ungraded. While the average profit per year from the ungraded herd was \$19.92 per cow, that of the graded herd was \$36.94 per cow. On an average the graded herd produced 64 pounds of butter fat per cow more than the ungraded herd. There is no question but that the purchase of a pure-bred sire would be one of the best investments a dairymen can make.

Up-to-date dairymen are beginning to realize the value of pure-bred sires in increasing the production of the herd and decreasing the cost of producing butter fat. They are not afraid to pay a good price for a pure-bred sire to head the herd, and they

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Castrating Old Ram

CAN a 3-year-old ram be safely castrated? If so, please tell me the right way to do it. I have an adult ram to castrate, and my 2-year-old ewes also have long tails. Should they be docked? If so, when is best time to do it, and how should it be done?—Beginner, Iowa.

Reply.—The old ram may be castrated with little danger if the operator is careful to employ clean instruments, with clean hands. Starve the ram for twelve hours. Split the scrotum wide open from the testicle to the right down to end of sac, so as to avoid leaving a pocket to retain pus, serum or blood. Draw out the testicle and sever the cords well above the testicle by means of an emasculator or emasculator. If neither instrument can be had use red-hot pinchers, or scrape through the cords slowly, or ligate with a clean string, to be removed after danger of bleeding has passed. When one testicle has been removed treat the other in the same way. After the operation it is well to insert in the wound a teaspoonful or so of lard to which a little iodoform has been added. Turn the ram onto grass or into a clean pen. Adult sheep are docked by cutting off the tail and then searing the wound with red-hot iron, or doing the docking with red-hot pinchers. Castrate the ram in fine weather, before flies are troublesome. Dock the ewes after lambing. It always is best to castrate and dock early in life, so as to prevent unnecessary pain and avoid possible losses.

Obstructed Teats

Growth form in the ends of the teats in some of my cows; then a scab comes and it is impossible to milk the cow, after which the milk goes bad and has a bad smell. Some cows have lost their usefulness on this account.—A. D., Michigan.

Reply.—Lying on dirty stable floors induces this trouble in many cases and when the growths and scabs form the milking tubs if used without due sterilization spread the infection into the udder and then taint is caused. Keep the floors clean and use gypsum and bedding freely every day. If a cow starts to have udder trouble of any kind isolate her and milk her last, as the disease may be spread by the milker's hands. Treat by soaking the end of teat in a hot, saturated solution of boracic acid once daily and then stirring through the obstruction with a bistoury if it tends to prevent milking. After the simple operation dilating plugs cut out of hardwood may be inserted daily to keep the duct open until healing takes place. The plugs each time must be boiled and then dried perfectly before use. When inserted dry it takes up moisture from the teat and by swelling dilates the duct. The boiling and baking disinfect the plug so that infection is not caused.

THIRTEEN years ago the first free rural mail delivery was made. The records show that no branch of the postal service of so recent a beginning has had equally remarkable results. At the end of the third year only 391 routes had been established. To-day regular week day service is maintained on 49,919 routes and more than 29,000,000 rural residents are served.

NEWS OF INTEREST TO FARMERS

Right Way to Pack Fruit

THE apples in this barrel are packed from the bottom to the top, each layer being cased so as to fill the barrel exactly. They are packed in this way will command much higher prices than if packed at random with



big and little apples all in the same layer on top.

The barrel should be packed flush with the top and after the heading is put on it should be pressed down slowly but firmly until the apples cannot move during shipment.

Importance of Farm Finances

THE fundamental facts upon which the problem of farm finance rests are the cost and the selling price of farm products; that the cost of farm products is measured and determined by three factors—(1) interest on the investment, (2) labor incidental to growing, harvesting and marketing the crops, and (3) soil fertility removed by the crops; and that farmers in the United States are not prosperous for the reason that they have to sell their products for less than they cost them.

Taking the average yields and cost per acre of corn, oats, wheat and timothy, the cost per bushel of grain is shown to be 57 cents, 53 cents and \$1.94, respectively, while a ton of timothy costs the average farmer \$11.15 to produce. On the other hand, the average prices received by the farmer are 25, 28 and 70 cents, respectively, per bushel for the grain and \$7.50 per ton for the hay. In the estimate of the cost in reckoning the loss of potash, phosphoric acid and nitrogen removed by the crops, which depletes soil fertility, the value of which the average farmer seldom considers. The problem of maintaining our soil fertility, however, is regarded as the paramount problem of agriculture, which cannot be made a permanent industry until it is first made profitable.

Among the good results mentioned that would follow the adoption of a system of profitable agriculture would be the rapid increase in the number of farmers, as a large number of wage-workers in the cities would take up farming, resulting in an approach to "that ideal national state of society with a more uniform distribution of population and with the greatest possible number of independent producers of wealth."

"I am now learning in agriculture though I was born and brought up on a farm, and whatever education I acquired was paid for by the proceeds of corn and wheat and hogs."—Ex-President Harrison.

He Got Value Received

A RECENT graduate of the Ohio State university, before engaging in farming on his own account on a portion of his father's farm, kept in mind for four or five months the problem of getting a complete equipment within his means. He first noted all the items which he considered necessary, and his list on his previous experience. His second step consisted of the task of obtaining the net retail prices of the various articles. The result was a total so large that the third and most difficult step, that of determining the actual necessities, was pursued for a considerable time. Having finally reduced his list to the minimum he entered into negotiations with several of the local merchants. Two of these made special efforts to obtain his order, and each made the suggestion that he take a trip at the merchant's expense to one of the cities in the state and select his goods from the large stocks in the wholesale supply houses. He accepted one of these offers, and during the state one spent a half day in a large warehouse selecting articles of the style and quality desired. The goods were shipped to the local dealer, who obtained his profit and still gave the purchaser a cash discount of 10 per cent from the ordinary prices. The young farmer brought his entire stock of miscellaneous equipment from the store at one trip with a team and wagon, and then spent a day or two arranging his workshop and disposing of his various purchases in the most convenient places, the extent of his outlay including the cost of the smallest details. Several items which were not up to the standard were taken back and exchanged for perfect goods at the local store, and in this way the entire outfit was delivered at the farm with very little expenditure of time and annoyance from perfect condition. By following this method the farmer was enabled to make his selection from well-known brands and from a larger stock than that afforded by the ordinary store, besides having a pleasant outing. His total purchase amounted to about \$125, a portion being for household use.

THE aim of the Danish farmer is to keep the largest number of efficient cows possible on a given area, a cow to two and one-half acres or less. Enough young stock is raised to keep the herd supplied with cows. From their feeding of cake and meal and the stall feeding of green crops an immense amount of manure of fine quality is made, and with their careful methods of husbandry the solids in a covered manure pit and the liquids in a cistern and applying in small quantities at frequent intervals during the rotation the producing power of their land is increasing from year to year. Both the Danish red cow and the black and white cow of Friesland are distinctively dairy cows and good producers.

ABOUT STALLIONS

Q.—WHAT about side bones in stallions? I do not know that I would like to throw down a good horse for a side bone which was not likely to be troublesome. I know I am on somewhat dangerous ground in saying that, but from what I know of a number of stallions that were that way I have come to that conclusion. Of course it is better not to have them.

I would rather not have a thoroughbred, I do not say it is hereditary, but I would rather not have it. Then there are the "roars," which might be brought about by inflammation or pneumonia. It is often not very troublesome. I do not think it is hereditary. It does not hurt a horse a great deal, but it decreases its commercial value.

Some of our heavy stallions have not good feet and if you get a small-footed stallion I would not care to select it; I would rather have one with a good strong foot in every way. Another trouble is "string halt," and I do not think there is a man living to-day who knows what causes it. I was informed this afternoon by one of our most prominent veterinarians that the man does not live

who can tell what brings that about; but there are too many stallions with that trouble.

Then there is the curb. It is an abnormal thing, because everybody can see it and it will often make a horse lame. There is a very strong feeling among horsemen that the larger a stallion is the better. I am led to the conclusion that when they are overgrown, or what you would call freaks, they are very uncertain.

If you will put on your thinking caps for a moment and look over the stallions throughout the country where you reside you will arrive at the conclusion that the moderate sized stallion of fairly good quality is the one that has left the greatest impression upon the horses in that section of the country. I think it is most important.

Q.—How do you exercise your stallions? A.—We have paddocks of about an acre in size and we turn them out there one at a time.

Q.—Do you object to them being driven? A.—No, I think if more of them were worked it would be better.—William Smith.

New Bacon Hog Imported

THE Large Black Hog, an English bacon breed, is little known in this country. There are only four herds, so far as is known, in the United States. They are a long, deep-bodied, narrow hog, with enormous drooping ears. They are not prepossessing in appearance, but their great fecundity recommends them to corn-belt farmers.

As a bacon breed the Large Black has a distinctive advantage in an unusually light shoulder. The carcass is rather limp and unprepossessing in appearance, but the bacon cooks as crisp as any. The bacon is rather a surprise upon the table after one has seen the carcass. The meat of the carcass is rather colorless.

Young Pigs Gain Best

WHEN the pig is 3 months old usually it eats 2½ pounds of food a day; when 7 months old it weighs five times as much, but eats only three times as much. Between 4 and 5 months of age the pig makes 50 pounds gain in thirty days from 120 pounds of feed. But after the pig is 9 months old it takes three months to put on 50 pounds of pork from 620 pounds of feed. Which is the more economical? The only way to figure feed is in proportion to the live weight.

It is found that hogs do not have worms when they are given charcoal, air slaked lime and ashes. Have a trough in which to put each part by itself and let the hog help themselves. A self-feeder is not best for young pigs, for under 5 months old they will eat too much.

Concrete Block Houses

SOME time ago Professor E. B. House of the Colorado agricultural college planned a residence, and as the bids for brick and stone were beyond the size of his pocketbook he decided to buy a concrete block machine and make the blocks himself. Inexperience in this gave him some anxiety, but he is now prepared to say that care in mixing, proportioning and curing is all that is necessary, and any one who has spare time and willing muscles can make these blocks, and the houses made of them will be as strong and as durable as stone.

Perhaps you don't like the dull gray color. It is cold and gloomy and many object to it. Here is one way to get around the color proposition: Get a machine which will mold the blocks face down, using a plain face plate, sprinkle in a little dry sand over the plate, say about one-quarter of an inch thick; then sprinkle in a layer of broken boulders, crushed granite or crushed blue quartz. On top of this place a layer of sand and cement one-half an inch thick in the proportion of two parts of sand to one part of cement; then fill up the mold with the concrete of part of cement, 2½ parts of sand and 5 parts of fine gravel, ram it up and set the block in the yard. When twenty-four or forty-eight hours old, pick them up and with a hose wash off the sand from the stones. You then have a beautiful rough face. The blocks will look mighty rough in the yard, but don't let your neighbors scare you out of any, for to 100 pounds of sand and 5 parts of fine gravel, ram it up and set the block in the yard. When twenty-four or forty-eight hours old, pick them up and with a hose wash off the sand from the stones. You then have a beautiful rough face. The blocks will look mighty rough in the yard, but don't let your neighbors scare you out of any, for to 100 pounds of sand and 5 parts of fine gravel, ram it up and set the block in the yard. When twenty-four or forty-eight hours old, pick them up and with a hose wash off the sand from the stones. You then have a beautiful rough face.

One sack of cement will make seventeen blocks, if made as above. One ordinary load of sand and gravel, mixed as directed, will make seventy-five blocks, and two good men can turn out from 125 to 150 blocks a day.

One block will be equivalent to sixteen bricks. Masons lay them in the wall at 4 cents each, and make good wages at it. Mr. House saved a great deal on his residence in this way, with the result that his house is cool in the summer, warm in the winter and as dry as can be from cellar to garret. Try it; you can do it.

A Good Well House

THIS little house covers a well built by a Rhode Island sea captain on the road near his house. The old captain was once wrecked on a desert island and suffered so from thirst that he made a vow that if he escaped he



would provide means for supplying water to as many people as he possibly could. Hundreds of farmers have benefited by his hospitality.

Poison for Sparrows

A POISON mixture for sparrows that has proved very effective is prepared as follows: Put one-eighth ounce of strychnine sulphate into three-quarters of a gill of hot water and boil until dissolved. Moisten one and one-half teaspoonfuls of starch with a few drops of cold water, add it to the poison solution and heat till the starch thickens. Pour the hot poisoned starch solution over one quart of wheat and stir until every kernel is coated. Small-kernelled wheat sold as poultry food. If reasonably clean, is preferable to first-quality grain, being cheaper and more easily eaten by the sparrows. A two-quart glass fruit jar is a good vessel to mix in, as it is easily shaken and allows the condition of the contents to be seen. If the coated wheat be spread thinly on a hard, flat surface, it will be dry enough for use in a short time. It should be dried thoroughly if it is to be put into jars and kept for future use. Dishes employed in preparing poison may be safely cleansed by washing. The poison should be well scattered, so that many birds may be able to partake at the same time, since after a few are affected their actions excite the suspicion of their comrades. Usually a few sparrows get only enough strychnine to paralyze them for a few hours, after which they recover. Important, therefore, to visit the feed stores to prevent such birds from escaping. It is well also to remove dead birds promptly, to avoid exciting the suspicions of those that are unaffected. In northern latitudes the best time to put out poison is just after a snowstorm, when other food is covered. The feeding place should be cleared of snow and the poison laid early in the morning.

The time will soon be here when a man will feel it a disgrace to have it said his soil is "poor." There is no excuse for unproductive farms and there would be none if every farmer would read and practice what is taught by college experiment stations.

DAIRYING IN DENMARK

The developments of the breeds to such a high degree in twenty-five years has been due to the farmers' skill, intelligence and common sense in selecting and breeding for milk production alone. The price of cows is \$30 to \$50. Only the best heifers are raised, and with the record of the dam and the qualities of the sire known their selection is comparatively simple. The cows are treated with kindness and every effort is made to have them comfortable at all times. On many farms the cows are regularly groomed.

The soiling crops used are rye, oats and peas, oats and vetch and clover and grass. These are hauled to the barnyard and fed green, or pastured off by tethering the cows along the edge. In some sections of small farms all the land is under cultivation.

In the cool European countries the soiling season of the crop is much longer. The cows are seldom turned to pasture in Denmark, but tethered by means of a halter on the head and a rope or chain twelve to twenty feet long, which is attached to a ten-inch pin driven into the ground. The cows are moved five times a day, from three to six feet, depending upon the amount of feed. Thus the crops are grazed off, even when they are three feet high, without waste from trampling. This is the Danish chief point of economy in summer feed. Practically no grain is fed while cows are on grass. A few

dairymen feed a little oil cake to their best milkers.

Water is hauled twice a day to the tethered cows. Many small dairymen take the cows to the stable to be milked three times a day. They are stabled all winter, fed all the straw they will eat, and on the average four pounds of hay, forty to 100 pounds of roots and about six pounds of grain per day, consisting of oil cake, bran, barley and oats.

An even flow of milk is required the year around, and most of the cows freshen from September to May.—Professor Wilbur Fraser.

No man comes to himself until he knows that he belongs to his world.